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Today's Topics:

 Higher Speeds with the G3RUH 9600 baud Packet Radio Modem

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Date: 18 Jan 94 19:42:35 GMT
From: news-mail-gateway@ucsd.edu
Subject: Higher Speeds with the G3RUH 9600 baud Packet Radio Modem
To: packet-radio@ucsd.edu

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 Higher Speeds with the G3RUH 9600 baud Packet Radio Modem

 by James Miller G3RUH

 1993 Aug 23

The modem is capable of speeds up to 64000 baud. This limit is set by the
maximum rate that the DAC chips can operate. This note describes how to
achieve rates from 4800 to 64000 baud. The slowest speed is suitable for
12.5 kHz channelised radios. The highest speed suits radios that have
broadcast FM bandwidth filters.

To implement a higher speed you need to:

1. Increase your TXData rate (!)

2. Increase the associated TXClock
3. Change some analogue filter components proportional to the speed increase.

It is not necessary to change either of the eproms. If you are going for a higher speed, it is likely that the radios involved are "specials" and you will already have wide bandwidth and flattish group delay, so the loopback selection 0 from the standard ROM will be OK.

The table below suggests the best conditions for different speeds. Component references are for my own PCB card. Clones are different.

Comp	Data Rate - Baud				
	4800	9600	19200	38400	64000

R6	220k	100k	47k	22k	15k
R16	100k	100k	100k	47k	15k
R17	82k	82k	82k	39k	12k
R18	39k	39k	39k	18k	5k6
R19	27k	27k	27k	15k	3k9
R21	100k	100k	100k	47k	15k
R22	56k	56k	56k	27k	8k2
C18	4n7	4n7	4n7	1n	680p
C20	220p	100p	47p	22p	12p
C27	2n2	1n	470p	470p	1n)
C28	2n2	1n	470p	470p	1n)
C29	6n8	3n3	1n5	470p	470p) 2% or
C30	220p	100p	47p	47p	100p) better
C31	1n	470p	220p	220p	470p)
C32	2n2	1n	470p	220p	150p)

Deviation +/-	1.5	3	6	12	20 kHz) In FM
IF Bandwidth	8	15	30	60	100 kHz) service

These modifications have been tested in both amateur and commercial service. All comments gratefully received, and added to the database.

73 de James G3RUH @ GB7DDX.#22.GBR.EU 1993 Aug 23 [Mon] 0917 utc

End of Packet-Radio Digest V94 #5
